Spin-off: Research on soils/estuaries.

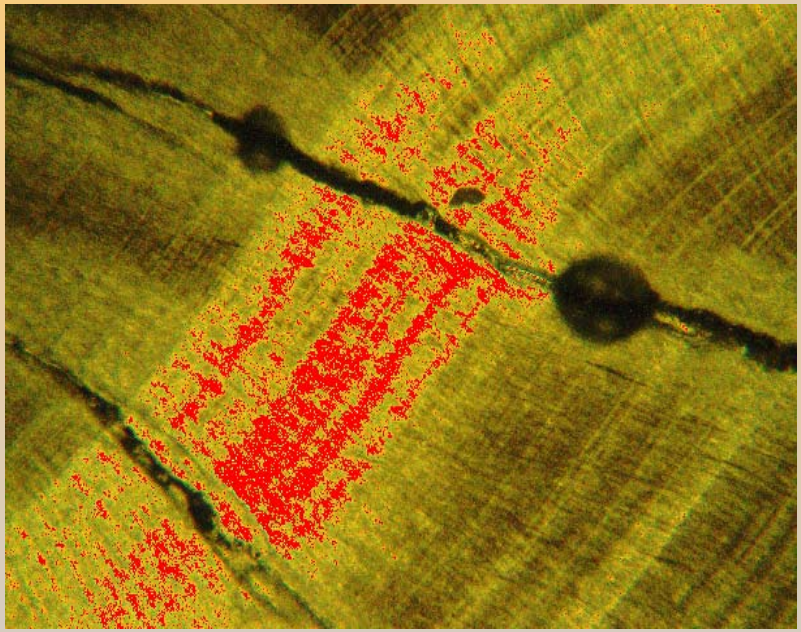
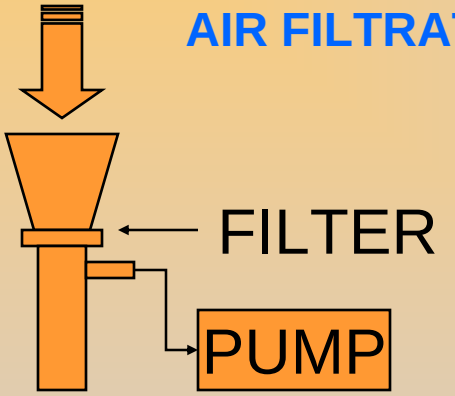


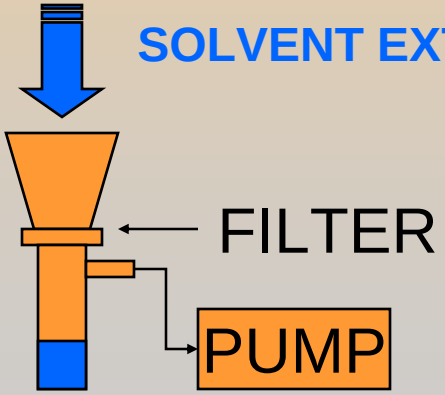
Image: Electron microprobe digital map of lead (red) superimposed on optical image of shell (100x)

- Soils in Crooksville, Ohio schoolyards – lead contaminated – possible aerosol deposits.
- Lead-enriched shells recovered from tidal flats – air versus water contamination.

{muspin 2}

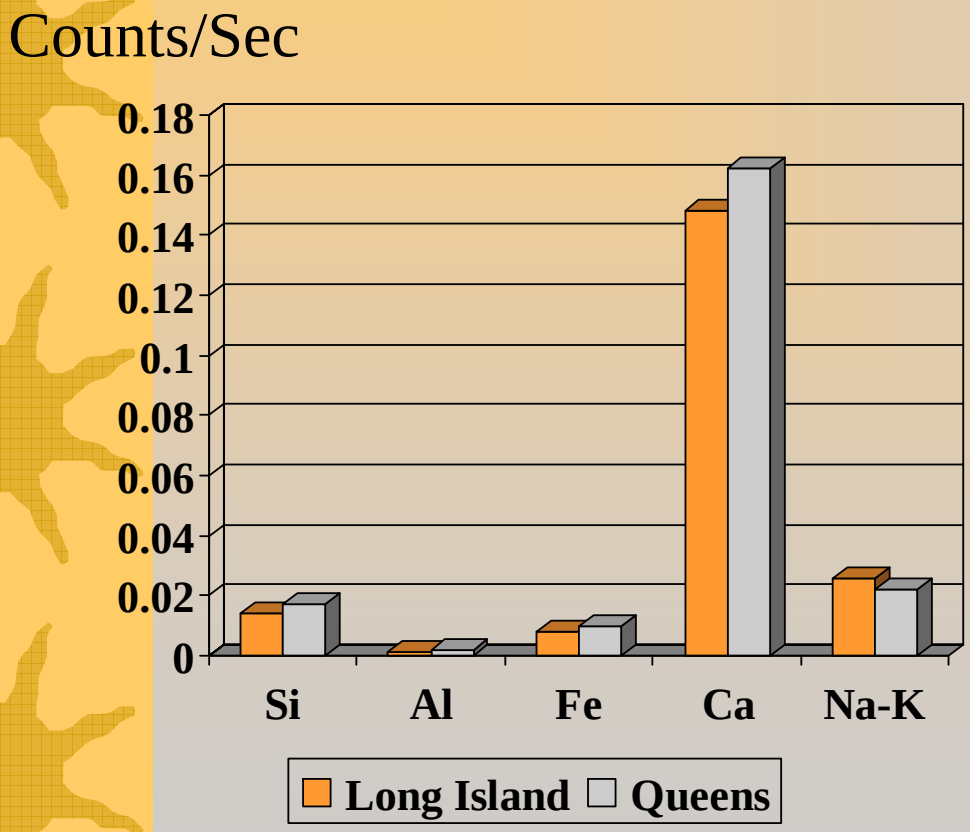
Filter Methods





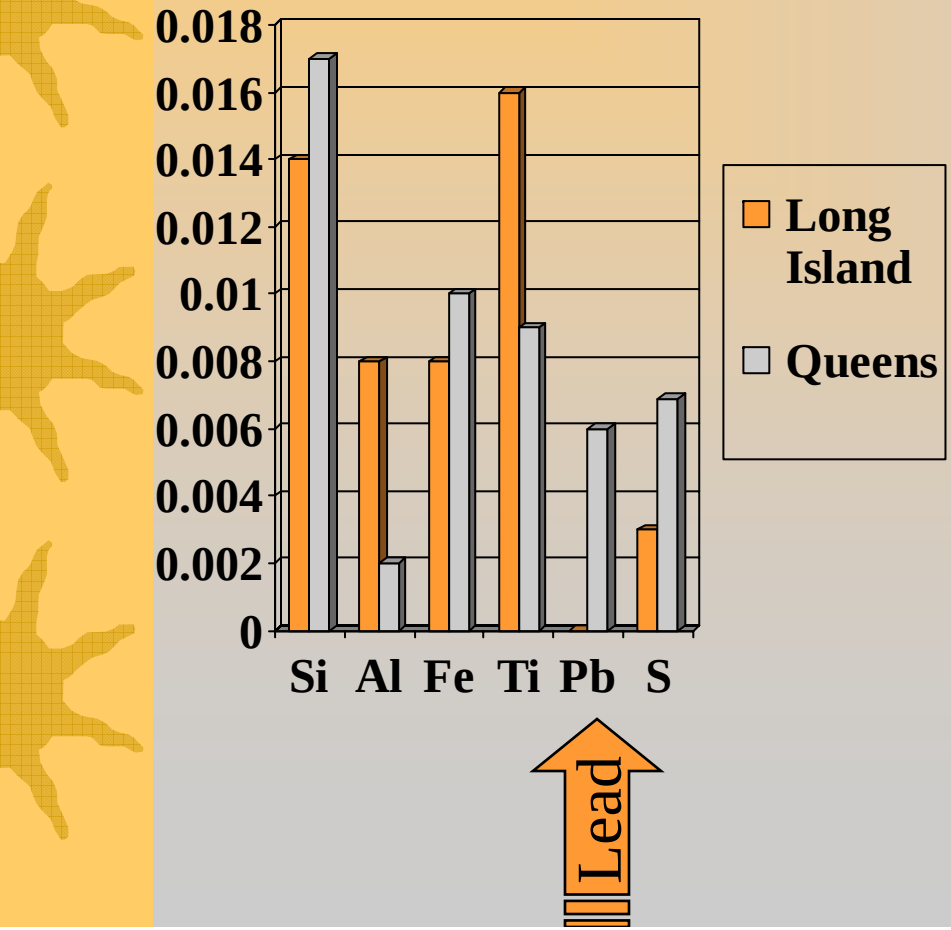
- Active (pumping) and passive collection of particles carried out using an AC generator and a stationary/mobile collection system.
- Generally pump for 1 hr/mobile and 3-4 hours/fixed.
- Particles can be washed and the recovered solutions analyzed.

Particulate Matter Chemistry



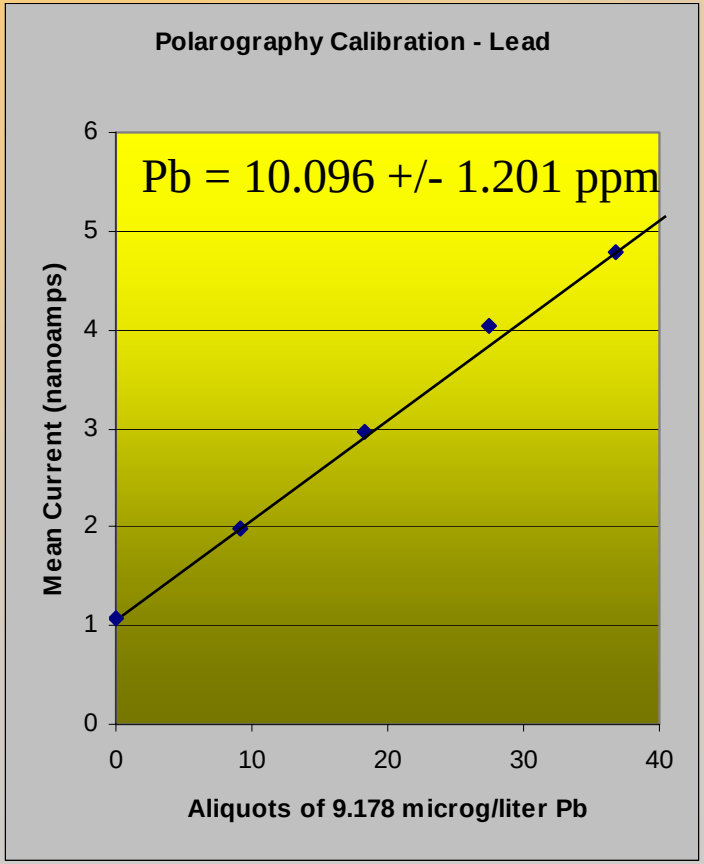
- In relative terms, ca in rainfall exceeds Na+k five-fold in Colorado, vs two-fold in Pennsylvania.
- Probable particulates: clay plus iron oxide-hydrate.

Anomalous Lead in Queens Particle Sample



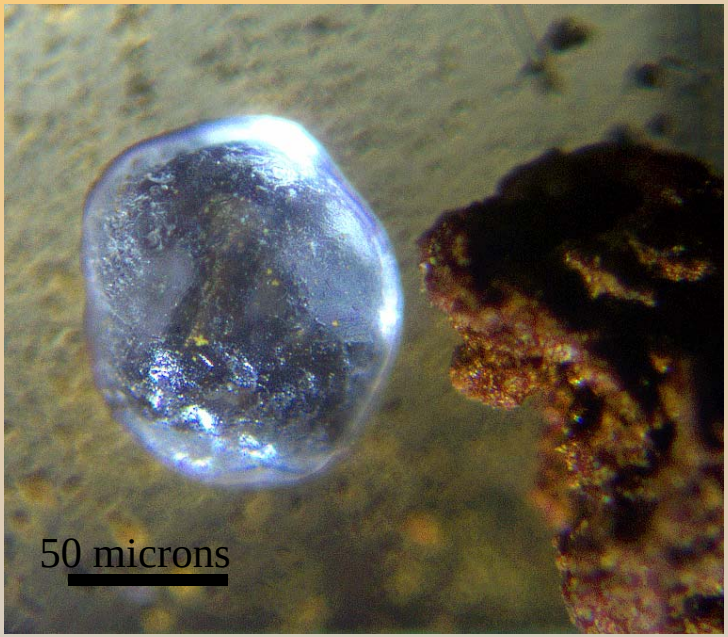
- Samples taken at Townsend high school in Flushing, Queens show lead and titanium contents that approximate silicon and other major elements.
- Samples collected on a 10 micron polycarbonate Millipore filter by pumping for 45 minutes.
- Analysis by Philips 1400 series x-ray fluorescence spectrometer (50kv, 50ma 300 sec.).

Polarography - Standardize



- Calibrate counts/second using polarography.
- Based on extensive analyses of Hudson molluscs, .006 c/s yields ca. 0.6 ppm.
- About 75 times ‘safe’ levels in drinking water.

Detailed Examination



Mummy sand (quartz) from Egyptian Tomb via transmitted light microscopy.

- Optical, scanning electron and transmission electron microscopy.
- X-ray diffraction – crystal structures.
- Polarography, atomic absorption for calibration.